Understanding Stroke in Women

Similar Care, Worse Outcomes?

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See related article, pages 909–914.

“...The pure and simple truth is rarely pure and never simple...”
—Oscar Wilde

Sex differences in clinical care and outcomes have been documented in multiple studies of patients with coronary artery disease, with research showing differences in presentation, disparities in diagnosis and management, and worse clinical outcomes in women compared to men.1,2 There has been concern that similar sex differences exist in the care and outcomes of patients with stroke, given the parallels in patient populations and risk factors in individuals with cardiac and cerebrovascular disease. To date, however, the research on the interaction between gender and stroke has been limited and results have been inconsistent. Thus, any new information on this topic is welcome.

In this issue of Stroke, Eriksson et al3 report on an analysis of 24,633 stroke events in 2006 from the large, well-designed, population-based Swedish National Quality Register (RIKS-Stroke). They found that compared to men, women were older (mean age difference 4.8 years) and were more often unconscious on presentation. No differences were found in processes of care such as administration of thrombolysis or discharge on anticoagulants. Women were more likely to develop deep venous thromboses and fractures, whereas men were more likely to develop pneumonia during their hospital stay. Three months poststroke, women were more likely to report depression, and to express dissatisfaction with their hospital care. Women were more likely than men to be dead or institutionalized at 3 months poststroke, even after adjustment for age; this difference was no longer significant after adjustment for level of consciousness on presentation.

What Is Different in Men and Women With Stroke?

On the whole, the nature and prevalence of vascular risk factors, including hypertension, diabetes, obesity, smoking and hyperlipidemia are similar in men and women.4–6 In the WHO MONICA project, the prevalence of hypertension appeared to be higher among women than among men in those aged 60 years and older.7 According to the National Diabetes Clearinghouse, there is a slightly higher prevalence of diabetes among men (12.0 million or 11.2%) compared to women (11.5 million, or 10.2%) for those aged 20 years or older (National Diabetes Statistics, 2007). Although the overall prevalence of hypercholesterolemia is higher in men than women, LDL cholesterol levels plateau in men and increase in women with advancing age and in the postmenopausal period.8,9 Smoking is more prevalent in men than in women in North America and other developing countries.10 Lower socioeconomic status has also been associated with a higher prevalence of chronic conditions and mortality.11 Although measuring socioeconomic status is difficult, differences in cardiovascular mortality between low and high socioeconomic strata appear to be more pronounced in women than in men.12

The finding of similar processes of care in women and men with stroke adds to a growing body of literature suggesting that in contrast to coronary artery disease, there appear to be few systematic sex differences in stroke care delivery.13 This may be due in part to the organized systems of stroke care delivery that have been developed around the world in order to facilitate delivery of thrombolysis for acute ischemic stroke. Despite this, however, sex differences in stroke outcomes persist. Consistent with previous studies, the RIKS-Stroke group found a longer length of stay and greater incidence of disability, institutionalization and depression poststroke in women compared to men. The mechanisms behind these findings are largely unexplained, but likely relate at least in part to sex differences in social supports as well as disability before stroke. There may also be sex differences in the quality or intensity of secondary stroke prevention.14 For example, in a study including 4933 high risk ambulatory patients with cardiovascular disease, women with stroke were less likely to achieve the recommended blood pressure and lipid targets.15 Underappreciation of cardiovascular risk may lead to reduced use or lower doses of vasoprotective medications in women.

The authors also speculate that women may have more severe strokes (perhaps due to higher prevalence of cardioembolic stroke),16,17 an assertion supported by the lower level of consciousness and higher complication rates (thromboembolic disease, fractures) seen in women poststroke. Unfortu-
nately, stroke severity—the major determinant of stroke outcome—was not documented in the present study. In addition, this study could not provide information on possible sex/gender differences in stroke presentation or subtype, interventions such as carotid endarterectomy, and outcomes such as quality of life. Finally, subanalyses of differential outcomes in women and men treated with thrombolysis were not reported; prior work has suggested that treatment with thrombolysis may nullify the worse outcomes seen in untreated women compared to men.18,19

Interestingly, the current study found that women were less satisfied than men with the care, rehabilitation and information received after stroke. Although the absolute differences were small (90.7% of women versus 92.7% of men were satisfied with their hospital care), and thus of uncertain clinical significance, these results are consistent with a previous study which found that women faced with a decision about stroke care prefer more detailed information than men.20 Together, these findings support the concept that it may be important for providers to consider gender differences in preferences for the delivery of stroke education and other communication materials.

In summary, a broad range of factors (patient, physician and health system-related) likely interact to explain sex and gender differences in clinical outcomes of patients with stroke. The acceptance of sex disparities is the initial step before making changes in health policy aimed at ameliorating the observed asymmetry in stroke outcomes.

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